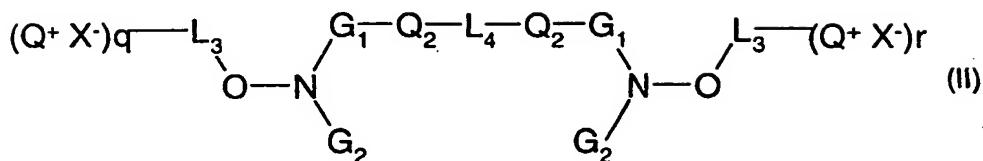
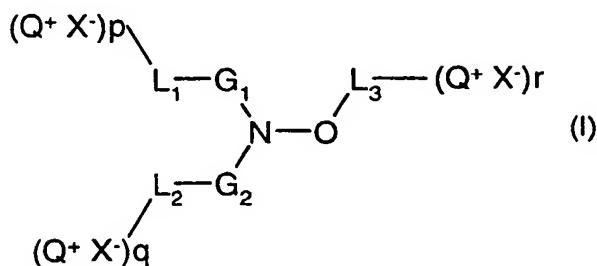


Claims

1. A compound of formula (I) or (II)



wherein

$G_1$  and  $G_2$  independently represent a tertiary carbon atom to which unsubstituted  $C_1-C_{18}$ alkyl or phenyl or with  $CN$ ,  $COC_1-C_{18}$ alkyl,  $CO$ -phenyl,  $COOC_1-C_{18}$ alkyl,  $OC_1-C_{18}$ alkyl,  $NO_2$ ,  $NHC_1-C_{18}$ alkyl or  $N(C_1-C_{18})_2$ alkyl substituted alkyl or phenyl groups are bonded; or one of

$G_1$  and  $G_2$  is a secondary carbon atom to which a group  $-P(O)(OR_{22})_2$  and the other is as defined above; or

$G_1$  and  $G_2$  together with the nitrogen atom to which they are bonded form a 5 to 8 membered heterocyclic ring or a polycyclic or spirocyclic 5 to 20 membered heterocyclic ring system, which is substituted with 4  $C_1-C_4$ alkyl groups or 2  $C_5-C_{12}$  spirocycloalkyl groups in ortho position to the nitrogen atom and which may be further substituted with one or more  $C_1-C_{18}$ alkyl,  $C_1-C_{18}$ alkoxy or  $=O$  groups; and

which may be interrupted by a further oxygen or nitrogen atom;

with the proviso that at least one of the 4  $C_1-C_4$ alkyl groups in ortho position to the nitrogen atom is higher alkyl than methyl;

$L_1$ ,  $L_2$  and  $L_4$  is a linking group selected from the group consisting of

a direct bond,  $R_1$ -Y or  $R_2$ -C(O)-Y- where Y is attached to  $G_1$  and/or  $G_2$ ;  $C_1$ - $C_{25}$ alkylene,

$C_2$ - $C_{25}$ alkylene interrupted by -O-, -S-, -SO-, -SO<sub>2</sub>-,  $\begin{array}{c} \diagup \\ \diagdown \end{array}$ N-R<sub>3</sub>,  $\begin{array}{c} \diagup \\ \diagdown \end{array}$ O-C-

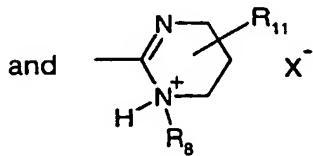
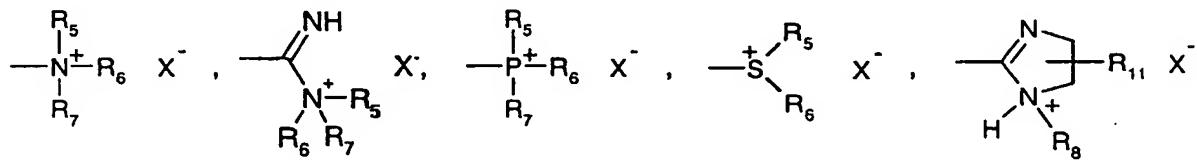
$\begin{array}{c} \diagup \\ \diagdown \end{array}$ C-O-,  $\begin{array}{c} \diagup \\ \diagdown \end{array}$ C-N- $\begin{array}{c} \diagup \\ \diagdown \end{array}$ R<sub>4</sub>, phenylene and  $C_5$ - $C_8$ cycloalkylene;

Y is O, or NR<sub>9</sub>

$L_3$  is a group containing at least one carbon atom and is such that the radical  $\bullet L_3-(Q^+X^-)$  derived from the group is able to initiate polymerization of ethylenically unsaturated monomers;

$Q_2$  is a direct bond, O, NR<sub>5</sub> or NR<sub>5</sub>R<sub>6</sub>;

$Q^+$  is a cationic group selected from the group consisting of



wherein

$R_1$  is  $C_1$ - $C_{18}$ alkylene,

$R_2$  is a direct bond or  $C_1$ - $C_{18}$ alkylene,

$R_3$  is hydrogen or  $C_1$ - $C_{18}$ alkyl,

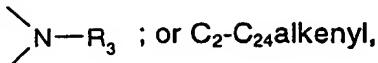
$R_4$  is hydrogen or  $C_1$ - $C_{18}$ alkyl,

$R_5$ ,  $R_6$  and  $R_7$  are each independently of the others hydrogen,  $C_1$ - $C_{18}$ alkyl,

$C_3$ - $C_{12}$ cycloalkyl, phenyl or  $C_7$ - $C_9$ phenylalkyl or  $C_6$ - $C_{10}$ heteroaryl which all may be unsubstituted or substituted by halogen, OH, NO<sub>2</sub>, CN,  $C_1$ - $C_4$ alkoxy, or

$R_5$ ,  $R_6$  and  $R_7$  together with the nitrogen or phosphor atom to which they are bonded form a 3-12 membered monocyclic or polycyclic ring which may contain further heteroatoms;

R<sub>8</sub> is hydrogen or C<sub>1</sub>-C<sub>25</sub>alkyl, C<sub>3</sub>-C<sub>25</sub>alkyl interrupted by oxygen, sulfur or by



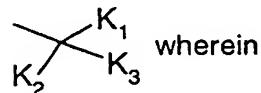
R<sub>9</sub> is hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>3</sub>-C<sub>18</sub>alkenyl, C<sub>3</sub>-C<sub>18</sub>alkinyl, phenyl, C<sub>7</sub>-C<sub>9</sub>phenylalkyl, which all may be unsubstituted or substituted by one or more hydroxy, halogen or C<sub>1</sub>-C<sub>4</sub>alkoxy groups;

R<sub>22</sub> is C<sub>1</sub>-C<sub>18</sub>alkyl;

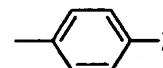
X<sup>-</sup> is the anion of a C<sub>1</sub>-C<sub>18</sub>carboxylic acid which may contain more than one carboxylic acid group, fluoride, chloride, bromide, iodide, nitrite, nitrate, hydroxide, acetate, hydrogen sulfate, sulfate, C<sub>1</sub>-C<sub>18</sub>alkoxy sulfate, aromatic or aliphatic sulfonate, carbonate, hydrogen carbonate, perchlorate, chlorate, tetrafluoroborate, borate, phosphate, hydrogenphosphate, dihydrogenphosphate or mixtures thereof; and

p, q, and r are independently of each other a number from 0 to 10 and at least one is different from 0.

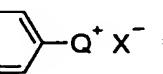
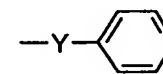
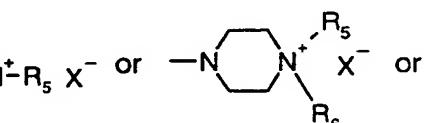
2. A compound according to claim 1 wherein in formula I or II -L<sub>1</sub>(Q<sup>+</sup>X<sup>-</sup>), -L<sub>2</sub>(Q<sup>+</sup>X<sup>-</sup>), and -L<sub>3</sub>(Q<sup>+</sup>X<sup>-</sup>), are a group



K<sub>1</sub> and K<sub>2</sub> are hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>5</sub>-C<sub>12</sub>cycloalkyl, phenyl or C<sub>7</sub>-C<sub>9</sub>phenylalkyl and

K<sub>3</sub> is a group -COK<sub>4</sub> or  where

K<sub>4</sub> is -Y-[(CH<sub>2</sub>-CH<sub>2</sub>)-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>]<sub>t</sub>-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> X<sup>-</sup> or  
 -Y-CH<sub>2</sub>-CHOH-CH<sub>2</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>X<sup>-</sup>-{[(CH<sub>2</sub>-CH<sub>2</sub>)-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>]<sub>t</sub>-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> X<sup>-</sup>]<sub>u</sub>,  
 where s is a number 0-8, t is a number 0-4 and u is 0 or 1 and Y is -O- or NR<sub>9</sub>; or

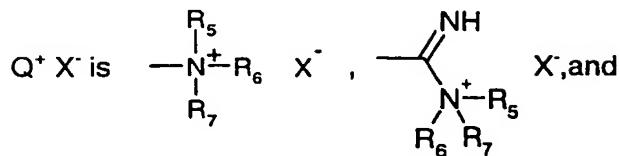
K<sub>4</sub> is a group  ,  or  or

Z is -C(O)- or a direct bond,

if Z is -C(O)-, K<sub>5</sub> has the same meaning as K<sub>4</sub>,

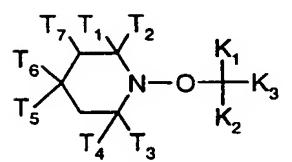
if Z is a direct bond, K<sub>5</sub> is Y-CH<sub>2</sub>-CHOH-CH<sub>2</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>X<sup>-</sup>-{[(CH<sub>2</sub>-CH<sub>2</sub>)-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>X<sup>-</sup>]<sub>t</sub>-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>R<sub>7</sub>X<sup>-</sup>]<sub>u</sub>, Q<sup>+</sup>X<sup>-</sup>, -CH<sub>2</sub>Q<sup>+</sup>X<sup>-</sup> or -CHCH<sub>3</sub>Q<sup>+</sup>X<sup>-</sup>;

and Y is  $-O-$ ,  $-NR_9$  or a direct bond;

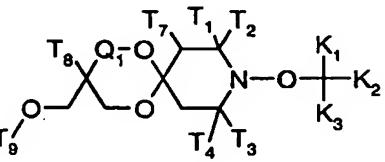


the other substituents are as defined in claim 1.

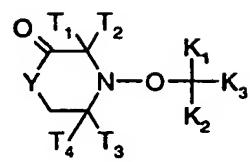
3. A compound according to claim 1 of formulae Ia, Ib, Ic, Id or Ie



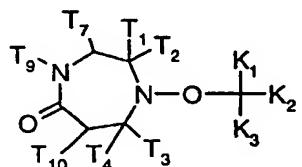
(Ia)



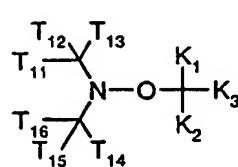
(Ib)



(Ic)



(Id)



(Ie)

wherein

$Q_1$  is a direct bond or a  $-CH_2-$  group;

if  $Q_1$  is a direct bond,  $T_8$  is hydrogen,

if  $Q_1$  is  $-CH_2-$ ,  $T_8$  is methyl or ethyl;

$T_1$ ,  $T_2$ ,  $T_3$  and  $T_4$  are independently methyl or ethyl with the proviso that at least one is ethyl;

$T_7$  and  $T_{10}$  are independently hydrogen or methyl;

$T_5$  and  $T_6$  are hydrogen or

$T_5$  and  $T_6$  together are a group  $=O$ ,  $=NOH$ ,  $=NO-T_9$  or

$T_5$  is hydrogen and  $T_6$  is  $-O-T_9$  or  $-NR_9-T_9$  where  $T_9$  is hydrogen,  $R_9$  or  $-C(O)-R_9$ , where  $R_9$  is hydrogen,  $C_1-C_{18}$ alkyl,  $C_3-C_{18}$ alkenyl,  $C_3-C_{18}$ alkinyl, phenyl,  $C_7-C_9$ phenylalkyl, which may be unsubstituted or substituted by one or more hydroxy, halogen or  $C_1-C_4$ alkoxy groups;

$T_{11}$ ,  $T_{12}$ ,  $T_{13}$ ,  $T_{14}$ ,  $T_{15}$  and  $T_{16}$  independently are  $C_1$ - $C_{18}$ alkyl,  $C_3$ - $C_{18}$ alkenyl,  $C_3$ - $C_{18}$ alkinyl,  $C_5$ - $C_{12}$ cycloalkyl, phenyl or  $C_7$ - $C_9$ phenylalkyl; or

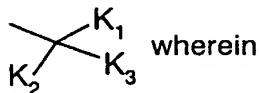
$T_{11}$  is hydrogen and  $T_{12}$  is a group  $-P(O)(OC_2H_5)_2$  and the others are as defined above;

or  $T_{11}$  and  $T_{14}$  are a group  $-CH_2-O-T_9$  and the others are as defined above; or

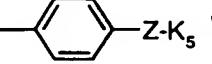
$T_{16}$  is a group  $-C(O)-Y-R_5$  and the others are as defined above; or

$T_{11}$ ,  $T_{12}$  and  $T_{13}$  are a group  $-CH_2OH$ ;

$-L_3(Q^+X^-)$ , is a group



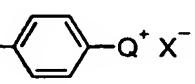
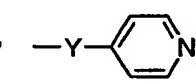
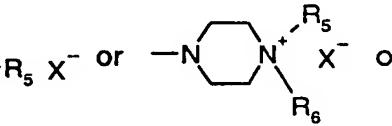
$K_1$  and  $K_2$  are hydrogen,  $C_5$ - $C_{12}$ cycloalkyl, phenyl or  $C_7$ - $C_9$ phenylalkyl and

$K_3$  is a group  $-COK_4$  or  where

$K_4$  is  $Y-[(CH_2-CH_2)-(CH_2)_s-N^+ R_5R_6 X^-]_t-CH_2-CH_2-(CH_2)_s-N^+ R_5R_6R_7 X^-$  or

$-Y-CH_2-CHOH-CH_2-N^+ R_5R_6 X^--\{[(CH_2-CH_2)-(CH_2)_s-N^+ X^- R_5R_6]_t-CH_2-CH_2-(CH_2)_s-N^+ R_5R_6R_7 X^- \}_u$ ,

where  $s$  and  $t$  is a number 0-4 and  $u$  is 0 or 1; or

$K_4$  is a group  ·  or 

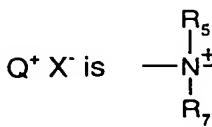
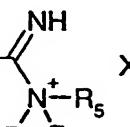
$Z$  is  $-C(O)-$  or a direct bond,

if  $Z$  is  $-C(O)-$   $K_5$  has the meaning of  $K_4$ ,

if  $Z$  is a direct bond,  $K_5$  is  $O-CH_2-CHOH-CH_2-N^+ R_5R_6 X^--\{[(CH_2-CH_2)-(CH_2)_s-N^+ R_5R_6 X^-]_t-CH_2-$

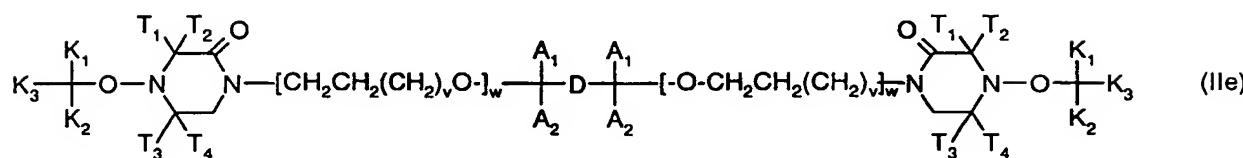
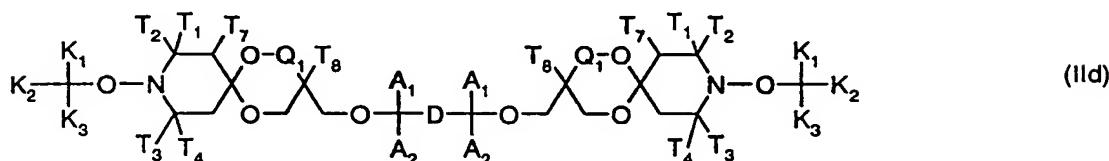
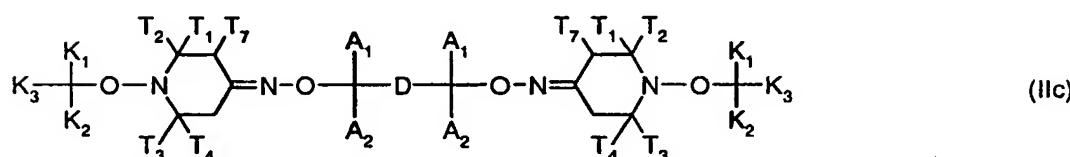
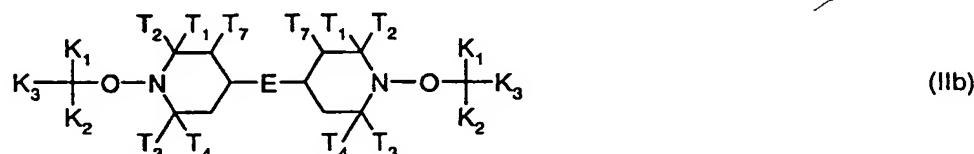
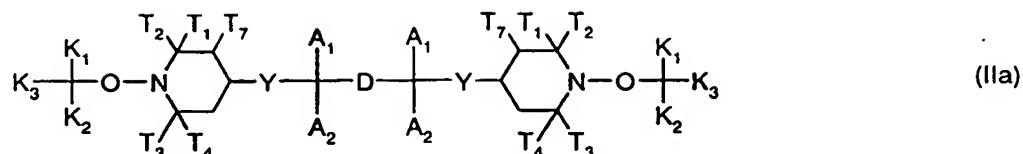
$CH_2-(CH_2)_s-N^+ R_5R_6R_7 X^- \}_u$ ,  $Q^+X^-$ ,  $-CH_2Q^+X^-$  or  $-CHCH_3Q^+X^-$ ;

$Y$  is  $-O-$  or  $-NR_9$ ;

$Q^+X^-$  is  ·   $X^-$ , and

$X^-$  and the other substituents are as defined in claim 1.

#### 4. A compound according to claim 1 of formula IIa, IIb, IIc, IId or IIe

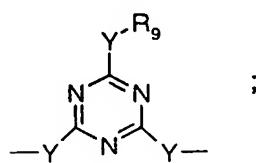


wherein

$A_1$  and  $A_2$  are independently hydrogen or together with the carbon atom to which they are bonded form a carbonyl group,  $-C(O)-$ ;

D is a direct bond or C<sub>1</sub>-C<sub>12</sub>alkylene, C<sub>1</sub>-C<sub>12</sub>alkylene which is interrupted by one or more O, S, or NR<sub>9</sub> atoms, C<sub>5</sub>-C<sub>12</sub>cycloalkylene or phenylene;

E is a group  $-\text{NR}_9-(\text{CH}_2)_x-\text{NR}_9-$  where x is a number from 2 to 12 or a group



v is a number from 0 to 10 and w is 0 or 1;

$Q_1$  is a direct bond or a  $-CH_2-$  group;

if  $Q_1$  is a direct bond,  $T_8$  is hydrogen,

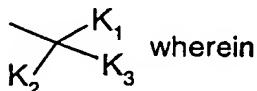
if  $Q_1$  is  $-CH_2-$ ,  $T_8$  is hydrogen, methyl or ethyl;

$Y$  is  $-O-$  or  $-NR_9$ ;

$T_1$ ,  $T_2$ ,  $T_3$  and  $T_4$  are independently methyl or ethyl with the proviso that at least one is ethyl;

$T_7$  is hydrogen or methyl;

$-L_3(Q^+X^-)$ , is a group



$K_1$  and  $K_2$  are hydrogen,  $C_5-C_{12}$ cycloalkyl, phenyl or  $C_7-C_9$ phenylalkyl and

$K_3$  is a group  $-COK_4$  or where

$K_4$  is  $Y-[(CH_2-CH_2)-(CH_2)_s-N^+ R_5R_6 X^-]_t-CH_2-CH_2-(CH_2)_s-N^+ R_5R_6R_7 X^-$  or

$-Y-CH_2-CHOH-CH_2-N^+ R_5R_6 X^--[[(CH_2-CH_2)-(CH_2)_s-N^+ R_5R_6 X^-]_t-CH_2-CH_2-(CH_2)_s-N^+ R_5R_6R_7 X^-]_u$ ,

where  $s$  and  $t$  is a number 0-4 and  $u$  is 0 or 1; or

$K_4$  is a group or or or

$Z$  is  $-C(O)-$  or a direct bond,

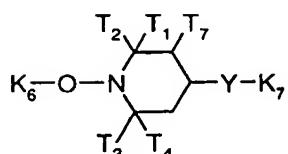
if  $Z$  is  $-C(O)-$   $K_5$  has the meaning of  $K_4$ ,

if  $Z$  is a direct bond,  $K_5$  is  $O-CH_2-CHOH-CH_2-N^+ R_5R_6 X^--[[(CH_2-CH_2)-(CH_2)_s-N^+ R_5R_6 X^-]_t-CH_2-CH_2-(CH_2)_s-N^+ R_5R_6R_7 X^-]_u$ ,  $Q^+X^-$ ,  $-CH_2Q^+X^-$  or  $-CHCH_3Q^+X^-$ ;

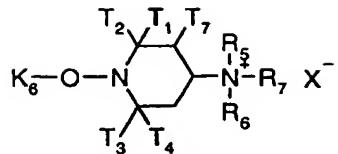
$Q^+X^-$  is or and

$X^-$  and the other substituents are as defined in claim 1.

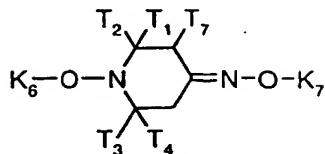
5. A compound according to claim 1 of formula IIIa, IIIb, IIIc, IIId or IIIe



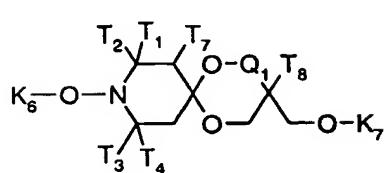
(IIIa)



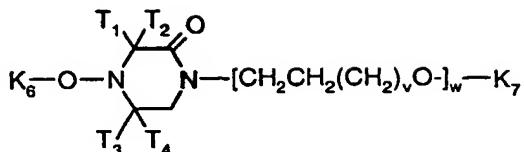
(IIIb)



(IIIc)



(IIIId)



(IIIe)

T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub> are independently methyl or ethyl with the proviso that at least one is ethyl;  
T<sub>7</sub> is hydrogen or methyl;

Y is O or NR<sub>9</sub>;

$Q_1$  is a direct bond or a  $-CH_2-$  group;

if  $Q_1$  is a direct bond,  $T_8$  is hydrogen,

if  $Q_1$  is  $-\text{CH}_2-$ ,  $T_8$  is methyl or ethyl;

v is a number from 0 to 10 and w is 0 or 1;

$K_7$  is a group  $-\text{CH}_2\text{-CHOH-CH}_2\text{-N}^+ \text{R}_5\text{R}_6 \text{X}^- \{[(\text{CH}_2\text{-CH}_2\text{)}\text{-}(\text{CH}_2)_s\text{-N}^+ \text{R}_5\text{R}_6 \text{X}]\}_t\text{-CH}_2\text{-CH}_2\text{-(CH}_2)_s\text{-N}^+ \text{R}_5\text{R}_6 \text{R}_7 \text{X}^-\}_u$ ,

where s and t is a number 0-4 and u is 0 or 1; or a group  $-D_1 \cdot Q^+ X$  where

D<sub>1</sub> is C<sub>1</sub>-C<sub>12</sub>alkylene, C<sub>1</sub>-C<sub>12</sub>alkylene which is interrupted by one or more O, S, or NR<sub>9</sub> atoms, C<sub>5</sub>-C<sub>12</sub>cycloalkylene or phenylene;

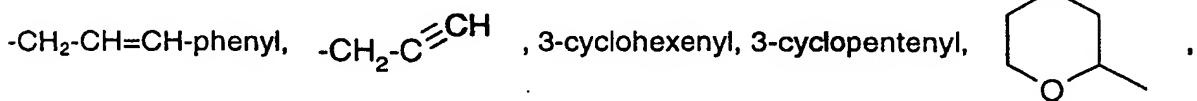
Q<sup>+</sup> X<sup>-</sup> is  $\begin{array}{c} \text{R}_5 \\ | \\ \text{---} \text{N}^+ \text{---} \text{R}_6 \\ | \\ \text{R}_7 \end{array}$  X<sup>-</sup>,  $\begin{array}{c} \text{NH} \\ \diagup \\ \text{---} \text{C} \text{---} \\ | \\ \text{R}_5^+ \text{---} \text{N} \\ | \\ \text{R}_6 \text{ R}_7 \end{array}$  X<sup>-</sup>, and

$K_6$  is selected from the group consisting of

$$-\text{CH}_2\text{-aryl}, \text{ alkyl}(\text{C}_1\text{-C}_{18})-\underset{\text{H}}{\text{C}}\text{-aryl}, \text{ } , \text{ } -\text{CH}_2\text{-CH}_2\text{-aryl}, \text{ alkyl}(\text{C}_1\text{-C}_{18})\underset{\text{H}_3\text{C}}{\text{C}}\text{-aryl}, \text{ } , \text{ } (\text{C}_5\text{-})$$

$C_6\text{cycloalkyl})_2\text{CCN}$ ,  $(C_1\text{-}C_{12}\text{alkyl})_2\text{CCN}$ ,  $-\text{CH}_2\text{CH}=\text{CH}_2$ ,  $(C_1\text{-}C_{12})\text{alkyl}-\text{CR}_{30}\text{-C(O)-(C}_1\text{-C}_{12}\text{)alkyl}$ ,

(C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>30</sub>-C(O)-(C<sub>6</sub>-C<sub>10</sub>)aryl, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>30</sub>-C(O)-(C<sub>1</sub>-C<sub>12</sub>)alkoxy, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>30</sub>-C(O)-phenoxy, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>30</sub>-C(O)-N-di(C<sub>1</sub>-C<sub>12</sub>)alkyl, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>30</sub>-CO-NH(C<sub>1</sub>-C<sub>12</sub>)alkyl, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>30</sub>-CO-NH<sub>2</sub>, -CH<sub>2</sub>CH=CH-CH<sub>3</sub>, -CH<sub>2</sub>-C(CH<sub>3</sub>)=CH<sub>2</sub>,



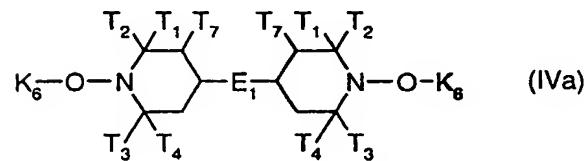
R<sub>30</sub> is hydrogen or C<sub>1</sub>-C<sub>12</sub>alkyl;

the alkyl groups are unsubstituted or substituted with one or more -OH, -COOH or -C(O)R<sub>30</sub> groups; and

the aryl groups are phenyl or naphthyl which are unsubstituted or substituted with C<sub>1</sub>-C<sub>12</sub>alkyl, halogen, C<sub>1</sub>-C<sub>12</sub>alkoxy, C<sub>1</sub>-C<sub>12</sub>alkylcarbonyl, glycidyloxy, OH, -COOH or -COO(C<sub>1</sub>-C<sub>12</sub>)alkyl and

X<sup>-</sup> and the other substituents are as defined in claim 1.

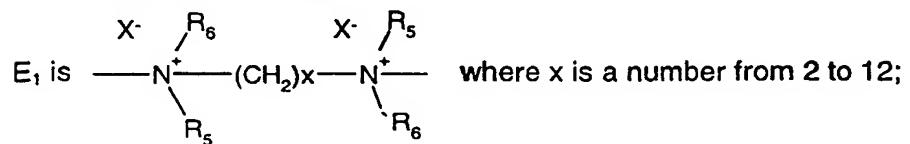
## 6. A compound according to formula IVa



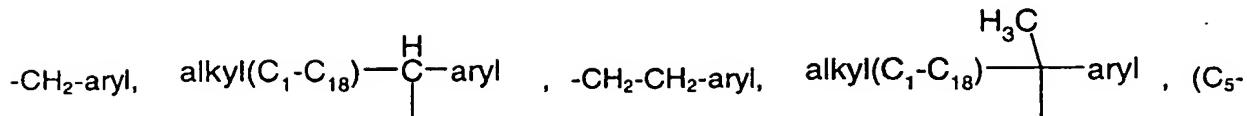
wherein

T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub> are independently methyl or ethyl with the proviso that at least one is ethyl;

T<sub>7</sub> is hydrogen or methyl;



K<sub>6</sub> is selected from the group consisting of



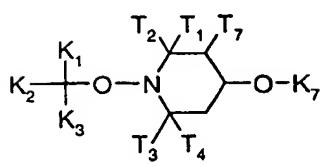
$\text{R}_{30}$  is hydrogen or  $\text{C}_1\text{-C}_{12}\text{alkyl}$ ;

the alkyl groups are unsubstituted or substituted with one or more  $-\text{OH}$ ,  $-\text{COOH}$  or  $-\text{C(O)R}_{30}$  groups; and

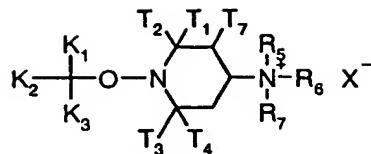
the aryl groups are phenyl or naphthyl which are unsubstituted or substituted with  $\text{C}_1\text{-C}_{12}\text{alkyl}$ , halogen,  $\text{C}_1\text{-C}_{12}\text{alkoxy}$ ,  $\text{C}_1\text{-C}_{12}\text{alkylcarbonyl}$ , glycidyloxy,  $\text{OH}$ ,  $-\text{COOH}$  or  $-\text{COO}(\text{C}_1\text{-C}_{12}\text{)alkyl}$  and

$\text{X}^-$  and the other substituents are as defined in claim 1.

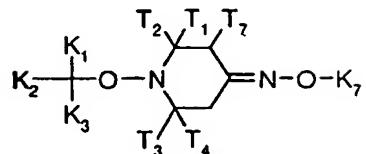
**7. A compound according to claim 1 of formula Va, Vb, Vc, Vd or Ve**



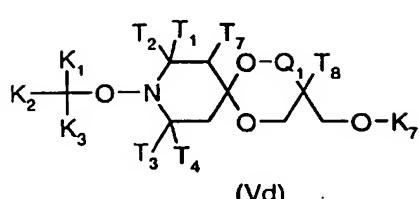
(Va)



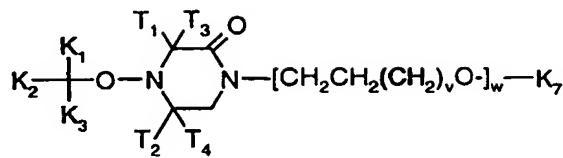
(Vb)



(Vc)



(Vd)



(Ve)

wherein

T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub> are independently methyl or ethyl with the proviso that at least one is ethyl;

T<sub>7</sub> is hydrogen or methyl;

Q<sub>1</sub> is a direct bond or a -CH<sub>2</sub>- group;

if Q<sub>1</sub> is a direct bond, T<sub>8</sub> is hydrogen,

if Q<sub>1</sub> is -CH<sub>2</sub>-, T<sub>8</sub> is methyl or ethyl;

K<sub>1</sub> and K<sub>2</sub> are hydrogen, C<sub>5</sub>-C<sub>12</sub>cycloalkyl, phenyl or C<sub>7</sub>-C<sub>9</sub>phenylalkyl and

K<sub>3</sub> is a group -COK<sub>4</sub> or where

K<sub>4</sub> is Y-[{(CH<sub>2</sub>-CH<sub>2</sub>)-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>]-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> X<sup>-</sup> or

-Y-CH<sub>2</sub>-CHOH-CH<sub>2</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>X<sup>-</sup>-{[(CH<sub>2</sub>-CH<sub>2</sub>)-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>]-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> X<sup>-</sup>}<sub>u</sub>,

where s and t is a number 0-4 and u is 0 or 1; or

K<sub>4</sub> is a group or or or

Z is -C(O)- or a direct bond,

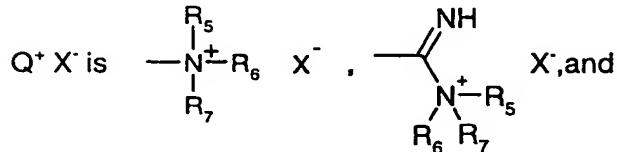
if Z is -C(O)- K<sub>5</sub> has the meaning of K<sub>4</sub>,

if Z is a direct bond, K<sub>5</sub> is O-CH<sub>2</sub>-CHOH-CH<sub>2</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>-{[(CH<sub>2</sub>-CH<sub>2</sub>)-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>]-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> X<sup>-</sup>}<sub>u</sub>, Q<sup>+</sup>X<sup>-</sup>, -CH<sub>2</sub>Q<sup>+</sup>X<sup>-</sup> or -CHCH<sub>3</sub>Q<sup>+</sup>X<sup>-</sup>;

K<sub>7</sub> is a group -CH<sub>2</sub>-CHOH-CH<sub>2</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>-{[(CH<sub>2</sub>-CH<sub>2</sub>)-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>]-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> X<sup>-</sup>}<sub>u</sub>,

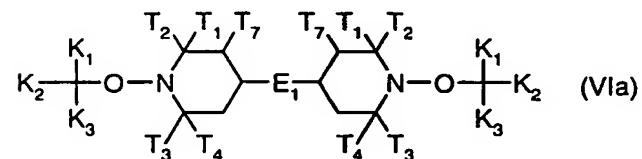
where s and t is a number 0-4 and u is 0 or 1; or a group -D<sub>1</sub>- Q<sup>+</sup> X<sup>-</sup> where

D<sub>1</sub> is C<sub>1</sub>-C<sub>12</sub>alkylene, C<sub>1</sub>-C<sub>12</sub>alkylene which is interrupted by one or more O, S, or NR<sub>9</sub> atoms, C<sub>5</sub>-C<sub>12</sub>cycloalkylene or phenylene;



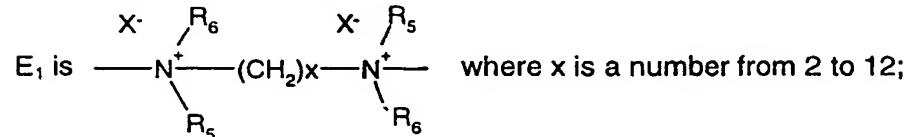
X<sup>-</sup> and the other substituents are as defined in claim 1.

8. A compound according to claim 1 of formula VIa



wherein

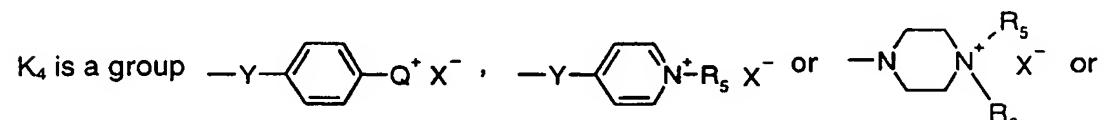
T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub> are independently methyl or ethyl with the proviso that at least one is ethyl; T<sub>7</sub> is hydrogen or methyl;



K<sub>1</sub> and K<sub>2</sub> are hydrogen, C<sub>5</sub>-C<sub>12</sub>cycloalkyl, phenyl or C<sub>7</sub>-C<sub>9</sub>phenylalkyl and

K<sub>3</sub> is a group -COOK<sub>4</sub> or  $\begin{array}{c} \text{C}_6\text{H}_5 \\ | \\ -Z-K_5 \end{array}$  where

K<sub>4</sub> is Y-[(CH<sub>2</sub>-CH<sub>2</sub>)-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>]-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>t</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> X<sup>-</sup> or  
-Y-CH<sub>2</sub>-CHOH-CH<sub>2</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>-{[(CH<sub>2</sub>-CH<sub>2</sub>)-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>]-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>t</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> X<sup>-</sup>},  
where s and t is a number 0-4 and u is 0 or 1; or



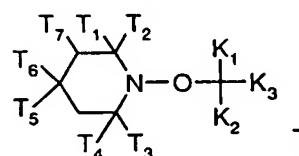
Z is -C(O)- or a direct bond,

if Z is -C(O)- K<sub>5</sub> has the meaning of K<sub>4</sub>,

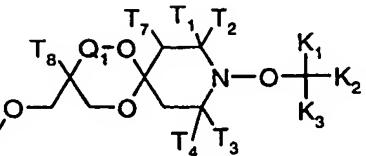
if Z is a direct bond, K<sub>5</sub> is O-CH<sub>2</sub>-CHOH-CH<sub>2</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>-{[(CH<sub>2</sub>-CH<sub>2</sub>)-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>]-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>t</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> X<sup>-</sup>}, Q<sup>+</sup>X<sup>-</sup>, -CH<sub>2</sub>Q<sup>+</sup>X<sup>-</sup> or -CHCH<sub>3</sub>Q<sup>+</sup>X<sup>-</sup> and

X<sup>-</sup> and the other substituents are as defined in claim 1.

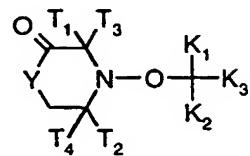
## 9. A compound according to claim 3 of formula Ia1, Ib1, Ic1, Id1 or Ie1



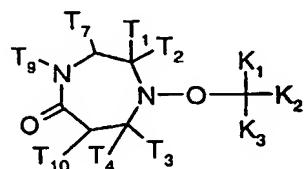
(Ia1)



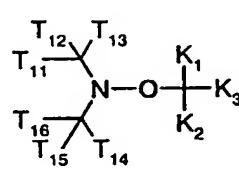
(Ib1)



(Ic1)



(Id1)



(Ie1)

wherein

Q<sub>1</sub> is a direct bond or CH<sub>2</sub>;

T<sub>1</sub>, T<sub>3</sub> are ethyl and T<sub>2</sub>, T<sub>4</sub> are methyl;

T<sub>7</sub> is methyl or H;

if Q<sub>1</sub> is a direct bond, T<sub>8</sub> is H;

if Q<sub>1</sub> is CH<sub>2</sub>, T<sub>8</sub> is methyl or ethyl;

T<sub>10</sub> is H if T<sub>7</sub> is methyl or T<sub>10</sub> is methyl if T<sub>7</sub> is H;

T<sub>11</sub>, T<sub>12</sub>, T<sub>13</sub>, T<sub>14</sub>, T<sub>15</sub> and T<sub>16</sub> are independently methyl or ethyl; or

T<sub>11</sub> is H, T<sub>12</sub> is isopropyl, T<sub>13</sub> is phenyl and T<sub>14</sub>, T<sub>15</sub>, T<sub>16</sub> are methyl; or

T<sub>11</sub> is H, T<sub>12</sub> is  $-P(=O)(OC_2H_5)_2$ , T<sub>13</sub> is t-butyl and T<sub>14</sub>, T<sub>15</sub>, T<sub>16</sub> are methyl; or

T<sub>11</sub> and T<sub>14</sub> are  $-CH_2O-T_9$  and T<sub>12</sub>, T<sub>15</sub> are methyl or phenyl and T<sub>13</sub>, T<sub>16</sub> are methyl or ethyl;

or

T<sub>11</sub>, T<sub>12</sub>, T<sub>13</sub>, T<sub>14</sub>, T<sub>15</sub> are methyl and T<sub>16</sub> is a group  $-CO-O-R_9$  or  $-CON(R_9)_2$ ; or

T<sub>11</sub>, T<sub>12</sub> and T<sub>13</sub> are  $-CH_2OH$ , T<sub>14</sub> is H, T<sub>15</sub> is isopropyl and T<sub>16</sub> phenyl;

T<sub>9</sub> is hydrogen, R<sub>9</sub> or  $-C(O)-R_9$ , where R<sub>9</sub> is hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>3</sub>-C<sub>18</sub>alkenyl, C<sub>3</sub>-C<sub>18</sub>alkynyl, phenyl, C<sub>7</sub>-C<sub>9</sub>phenylalkyl;

K<sub>1</sub> is H, K<sub>2</sub> is methyl or ethyl and

K<sub>3</sub> is a group  $-CO-K_4$  or

K<sub>4</sub> is  $-Y-CH_2-CH_2-(CH_2)_s-N^+X^+R_5R_6R_7$  or;

-Y-CH<sub>2</sub>-CHOH-CH<sub>2</sub>-N-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup>X<sup>-</sup>R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> where Y is O or NR<sub>9</sub> and s is a number from 0 to 2;

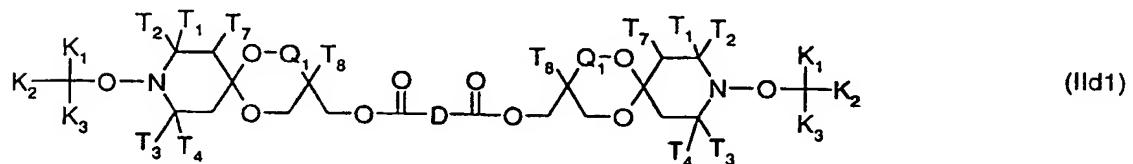
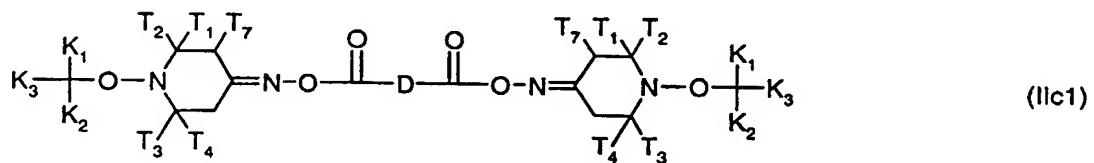
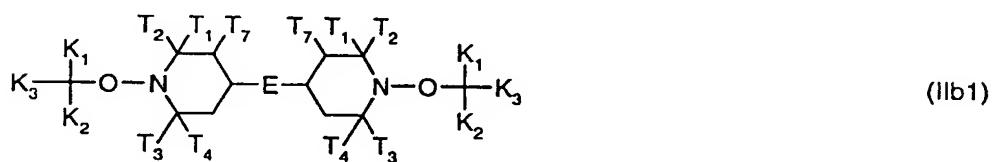
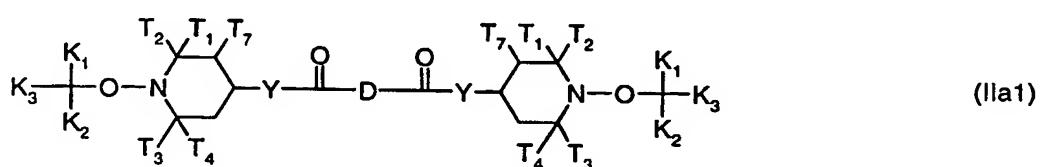
if  $K_3$  is  ,  $Z$  is  $-CO-$  or a direct bond;

if Z is  $-\text{CO}-$ ,  $K_5$  has the same meaning as  $K_4$ :

if Z is a direct bond,  $K_5$  is a group  $-\text{O}-\text{CH}_2-\text{CHOH}-\text{CH}_2-\text{N}-\text{CH}_2-\text{CH}_2-(\text{CH}_2)_s-\text{N}^+\text{X}^-\text{R}_5\text{R}_6\text{R}_7$ , or  $-\text{CH}_2\text{N}^+\text{R}_5\text{R}_6\text{R}_7$ ,  $\text{X}^-$  and

X' and the other substituents are as defined in claim 1

10. A compound according to claim 4 of formula IIa1, IIb1, IIc1 or IId1



wherein

Q<sub>1</sub> is a direct bond or CH<sub>2</sub>;

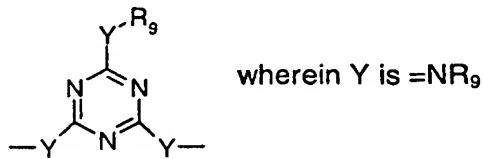
$T_1$ ,  $T_3$  are ethyl and  $T_2$ ,  $T_4$  and  $T_7$  are methyl;

if  $Q_1$  is a direct bond,  $T_8$  is H;

if  $Q_1$  is  $CH_2$ ,  $T_8$  is methyl or ethyl;

D is a direct bond, C<sub>1</sub>-C<sub>12</sub>alkylene or phenylene;

E is  $-\text{NR}_5-(\text{CH}_2)_x-\text{NR}_5-$  where x is 2 to 12 or a group



$K_1$  is H,  $K_2$  is methyl or ethyl and

$K_3$  is a group  $-\text{CO-}K_4$  or ;

$K_4$  is  $-\text{Y-CH}_2\text{-CH}_2\text{-(CH}_2\text{)}_s\text{-N}^+\text{X}^-\text{R}_5\text{R}_6\text{R}_7$  or;

$-\text{Y-CH}_2\text{-CHOH-CH}_2\text{-N-CH}_2\text{-CH}_2\text{-(CH}_2\text{)}_s\text{-N}^+\text{X}^-\text{R}_5\text{R}_6\text{R}_7$  where Y is O or  $\text{NR}_9$  and s is a number from 0 to 2;

$R_9$  is hydrogen,  $C_1\text{-}C_{18}$ alkyl,  $C_3\text{-}C_{18}$ alkenyl,  $C_3\text{-}C_{18}$ alkinyl, phenyl,  $C_7\text{-}C_9$ phenylalkyl;

if  $K_3$  is , Z is  $-\text{CO-}$  or a direct bond;

if Z is  $-\text{CO-}$   $K_5$  has the same meaning as  $K_4$ ;

if Z is a direct bond  $K_5$  is a group  $-\text{O-CH}_2\text{-CHOH-CH}_2\text{-N-CH}_2\text{-CH}_2\text{-(CH}_2\text{)}_s\text{-N}^+\text{X}^-\text{R}_5\text{R}_6\text{R}_7$  or  $-\text{CH}_2\text{N}^+\text{R}_5\text{R}_6\text{R}_7\text{X}^-$ ;

and

$X^-$  and the other substituents are as defined in claim 1.

11. A process for preparing a monomer/polymer clay nanocomposite dispersion comprising the steps of

- A) providing a first aqueous dispersion of a natural or synthetic clay which can be partially intercalated and/or exfoliated and wherein said clay has an exchangeable cation;
  - adding a compound according to claim 1 to said dispersion and exchanging said cation at least partially;
- B) adding to said dispersion at least one ethylenically unsaturated monomer and polymerizing at least a portion of said ethylenically unsaturated monomer.

12. A process according to claim 11 wherein the water phase of step A) is at least partially removed before performing step B).

13. A process according to claim 11 wherein the compound according to claim 1 is added in an amount of from 1% to 100% by weight, based on the weight of the clay.

14. A process according to claim 11 wherein the ethylenically unsaturated monomer or oligomer is selected from the group consisting of styrene, substituted styrene, conjugated dienes, acrolein, vinyl acetate, vinylpyrrolidone, vinylimidazole, maleic anhydride, (alkyl)acrylic acid anhydrides, (alkyl)acrylic acid salts, (alkyl)acrylic esters, (meth)acrylonitriles and (alkyl)acrylamides, vinyl halides or vinylidene halides or mixtures thereof.

15. A process according to claim 14 wherein the ethylenically unsaturated monomers are styrene,  $\alpha$ -methyl styrene, p-methyl styrene or a compound of formula  $\text{CH}_2=\text{C}(\text{R}_a)-(\text{C}=\text{Z})-\text{R}_b$ , wherein  $\text{R}_a$  is hydrogen or  $\text{C}_1\text{-}\text{C}_4$ alkyl,  $\text{R}_b$  is  $\text{NH}_2$ ,  $\text{O}^-(\text{Me}^+)$ , glycidyl, unsubstituted  $\text{C}_1\text{-}\text{C}_{18}$ alkoxy,  $\text{C}_2\text{-}\text{C}_{100}$ alkoxy interrupted by at least one N and/or O atom, or hydroxy-substituted  $\text{C}_1\text{-}\text{C}_{18}$ alkoxy, unsubstituted  $\text{C}_1\text{-}\text{C}_{18}$ alkylamino, di( $\text{C}_1\text{-}\text{C}_{18}$ alkyl)amino, hydroxy-substituted  $\text{C}_1\text{-}\text{C}_{18}$ alkylamino or hydroxy-substituted di( $\text{C}_1\text{-}\text{C}_{18}$ alkyl)amino,  $-\text{O}-\text{CH}_2-\text{CH}_2-\text{N}(\text{CH}_3)_2$  or  $-\text{O}-\text{CH}_2-\text{CH}_2-\text{N}^+\text{H}(\text{CH}_3)_2\text{An}^-$ ;

$\text{An}^-$  is a anion of a monovalent organic or inorganic acid;

$\text{Me}$  is a monovalent metal atom or the ammonium ion.

$\text{Z}$  is oxygen or sulfur.

16. A process according to claim 11 wherein an acid containing unsaturated monomer is added, which is selected from the group consisting of methacrylic anhydride, maleic anhydride, itaconic anhydride, acrylic acid, methacrylic acid, itaconic acid, maleic acid, fumaric acid, acryloxypropionic acid, (meth)acryloxypropionic acid, styrene sulfonic acid, ethylmethacrylate-2-sulphonic acid, 2-acrylamido-2-methylpropane, sulphonic acid; phosphoethylmethacrylate; the corresponding salts of the acid containing monomer, and combinations thereof.

17. A process according to claim 11 wherein step B) is repeated with a second ethylenically unsaturated monomer which is different from the first one, leading to a block copolymer.

18. A process according to claim 11 wherein the natural or synthetic clay is selected from the group consisting of smectite, phyllosilicate, montmorillonite, saponite, beidellite, montronite,

hectorite, stevensite, vermiculite, kaolinite, hallosite, synthetic phyllosilicates, and combinations thereof.

**19.** A monomer/polymer clay nanocomposite dispersion obtainable by a process according to claim 11.

**20.** A composition comprising an aqueous dispersion of a natural or synthetic clay which is partially intercalated and/or exfoliated and a compound according to claim 1.

**21.** A composition according to claim 26, which contains additionally an ethylenically unsaturated monomer and/or a organic solvent.

**22.** Use of a compound of formula I or II for the polymerization of ethylenically unsaturated monomers.

**23.** Use of a monomer/polymer clay nanocomposite dispersion obtainable according to claim 11 as additive in paints, coatings, inks, adhesives, reactive diluents or in thermoplastic materials.